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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: David MENDLOVIC, et al  
Application No.: 09/937,580  
Filed: September 27, 2001  
For: A METHOD AND SYSTEM FOR SUPER RESOLUTION

Group No.:  
Examiner:

Attorney Docket No.: U 013655-0

Assistant Commissioner of Patents  
Washington, D.C. 20231

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Technology Center 2600

**CERTIFICATE OF MAILING UNDER 37 C.F.R. 1.8(a)**

I hereby certify that the attached correspondence comprising:

Information Disclosure Statement  
Form PTO-1449  
Twenty Five (25) References  
Post Card

is being deposited with the United States Postal Service as first class mail in an envelope addressed to:

Assistant Commissioner for Patents  
Washington, D.C. 20231

on November 7, 2001

JULIAN H. COHEN

(type or print name of person mailing paper)

Signature of person mailing paper

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE



In re Application of:	)	Art Unit:
David MENDLOVIC et al.	)	Examiner: (N/A)
Serial No.: 09/937,580	)	Washington, D.C.
Filed: September 27, 2001	)	October 21, 2001
For: A METHOD AND SYSTEM FOR SUPER	)	Docket No.: U 013655-0
RESOLUTION	)	

INFORMATION DISCLOSURE STATEMENT [IDS]

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FEB 21 2002

Technology Center 2600

Honorable Commissioner of Patents and Trademarks  
Washington, D.C. 20231

Sir:

This Information Disclosure Statement is submitted in accordance with 37 C.F.R. 1.97, 1.98, and it is requested that the information set forth in this statement and in the listed documents be considered during the pendency of the above-identified application, and any other application relying on the filing date of the above-identified application or cross-referencing it as a related application.

☒ 1. This IDS should be considered, in accordance with 37 C.F.R. 1.97, as it is filed:

(Check one of the boxes A-D)

☒ A. within three months of the filing date of the above-identified national application or within three months of the entry into the national stage of the above-identified international application.

☐ B. before the mailing date of a first office action on the merits.

☐ C. after (A) and (B) above, but before final rejection or allowance, and Applicants have made the necessary certification (box "i" below) or paid the necessary fee (box "ii" below).

(check one of the boxes "i" and "ii" below:)

☐ i. Counsel certifies that, upon information and belief, each item of information listed herein was either (a) cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this IDS; or (b) was not cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of undersigned after making reasonable inquiry, was not known to any individual designated in 1.56(c) more than three months prior to the filing of this IDS.

☐ ii. A check for the fee set forth in 1.17(p), presently believed to be \$230, is enclosed (check no. \_\_\_\_\_).

☐ D. after (A), (B) and (C) above, but before payment of the issue fee: Applicant petitions under 37 C.F.R. 1.97(d) for the consideration of this IDS. A check for the fee set forth in §1.17(i), presently believed to be \$130 is enclosed (check no. \_\_\_\_\_). Counsel certifies that, upon information and belief, each item of information listed herein was either (i) cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the IDS; or (ii) was not cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the undersigned after making reasonable inquiry, was not known to any individual designated in 1.56(c) more than three months prior to the filing of this IDS.

☒ 2. In accordance with 37 C.F.R. 1.98, this IDS includes a list (e.g., form PTO-1449) of all patents, publications, or other information submitted for consideration by the office, either incorporated into this IDS or as an attachment hereto. A copy of each document listed is attached, except as explained below.

(check boxes A and/or B and fill in blanks, if appropriate.)

☐ A. Document(s) \_\_\_\_\_ is (are) deemed substantially cumulative to document(s) \_\_\_\_\_, and, in accordance with 1.98(c), only a copy of each of the latter documents is enclosed.

☐ B. Certain documents were previously cited by or submitted to the Office in the following prior application(s), which are relied upon under 35 U.S.C. 120:

[insert serial numbers and filing dates of prior applications]

Applicant identifies these documents by attaching hereto copies of the forms PTO-892 and PTO-1449 from the files of the prior application(s) or a fresh PTO-1449 listing these documents, and request that they be considered and made of record in accordance with 1.98(d). Per 37 CFR 1.98(d), copies of these documents need not be filed in this application.

☒ 3. Document "An Experiment Going Beyond Abbe's Limit of Diffraction", by W. Gartner and A. Lohmann (Page 2, line AH) is not in the English language. In accordance with 1.98(c), Applicant states:

☒ An English translation of each document (or of the pertinent portions thereof), or a copy of each corresponding English-language patent or application, or English-language abstract (or claim) is enclosed.

☐ A concise explanation of the relevance of document(s) \_\_\_\_\_ is found in the attached search report (see reply to Comment 68 in the preamble to the final rules; 1135 OG 13 at 20).

☐ A concise explanation of the relevance of document(s) \_\_\_\_\_ is set forth as follows:  
[Insert concise explanation of relevance]

☐ A concise explanation of the relevance of document(s) \_\_\_\_\_ can be found on page(s) \_\_\_\_\_ of the specification.

☐ A concise explanation of document(s) \_\_\_\_\_ can be found on the attached sheet.

4. No explanation of relevance is necessary for documents in the English language (see reply to Comments 67 and 68 in the preamble to the final rules; 1135 OG 13 at 20).

☐ 5. Other information being provided for the examiner's consideration follows:

A \_\_\_\_\_ dated \_\_\_\_\_, which issued during the prosecution of Applicant's Patent Application No. \_\_\_\_\_, which corresponds to the present application.

6. In accordance with 37 C.F.R. 1.97(g) and (h), the filing of this IDS should not be construed as a representation that a search has been made or that information cited is, or is considered to be, material to patentability as defined in §1.56 (b), or that any cited document listed or attached is (or constitutes) prior art. Unless otherwise indicated, the date of publication indicated for an item is taken from the face of the item and Applicant reserves the right to prove that the date of publication is in fact different.

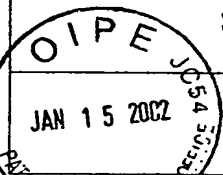
**CROSS REFERENCE UNDER 37 C.F.R. §1.78 TO RELATED APPLICATIONS**

Pursuant to 37 C.F.R. § 1.78, Applicant notes that the above-identified patent application may be related to the following U.S. Patent Applications:

Respectfully submitted,



\_\_\_\_\_  
Julian H. Cohen  
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26 West 61st Street  
New York, NY 10023  
Reg. No. 20,302 (212) 708-1887

FORM PTO-1449 (Colb)	ATTY DOCKET NO. U 013655-0	SERIAL NUMBER 09/937,580
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANTS' INFORMATION STATEMENT	APPLICANT David MENDLOVIC, et al.	<b>RECEIVED</b> <b>FEB 21 2002</b> Technology Center 2000 GROUP ART-000T
	FILING DATE September 27, 2001	

## U.S. PATENT DOCUMENTS

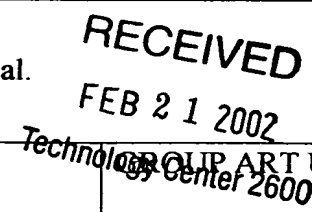

Examiner's Initials		DOCUMENT NO.	DATE	NAME	CLASS	SUB	FILING DATE
	AA	5,657,147	Aug. 1997	Yoshikawa et al.	359	208	
	AB	5,315,095	May 1994	Marom et al.	235	462	
	AC	4,748,316	May 1988	Dickson	235	454	
	AD	4,820,911	Apr. 1989	Arackellian et al.	235	467	
	AE	5,680,253	Oct. 1997	Hasegawa et al.	359	566	
	AF	4,978,860	Dec. 1990	Bayley et al.	250	568	
	AG	5,638,211	June 1997	Shiraishi	359	559	

## FOREIGN PATENT DOCUMENTS

		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB	TRANS- LATION
	AH	EP 0 777 147	June 1997	Europe			

## OTHER ART (Including Author, Bills, Pertinent Pages, Etc.)

AI	H. Dammann et al., "High Efficiency In-Line Multiple Imaging By Means of Multiple Phase Holograms", <i>Opt. Commun.</i> 3(5), July 1971, pp. 312-315.
AJ	D. Mendlovic et al., "Shift and Scale Invariant Pattern Recognition using Mellin Radial Harmonics", <i>Opt. Commun.</i> 67(3), July 1988, pp. 172-176.
AK	D. Mendlovic et al., "Optical-Coordinate Transformation Methods and Optical-Interconnection Architectures", <i>Appl. Opt.</i> 32(26), September 1993, pp. 5119-5124.
EXAMINER:	
DATE CONSIDERED:	
EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

FORM PTO-1449 (Colb)	ATTY DOCKET NO. U 013655-0	SERIAL NUMBER 09/937,580
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANTS' INFORMATION STATEMENT	APPLICANT David MENDLOVIC, et al.	
	FILING DATE September 27, 2001	

## U.S. PATENT DOCUMENTS

Examiner's Initials		DOCUMENT NO.	DATE	NAME	CLASS	SUB	FILING DATE
	AA	4,716,414	Dec. 1987	Luttrell et al.	342	179	
	AB	5,315,411	May 1994	Blanding	358	482	
	AC	5,684,620	Nov. 1997	Schoon	359	298	

## FOREIGN PATENT DOCUMENTS

		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB	TRANS- LATION
	AD						

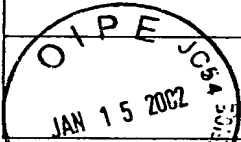
## OTHER ART (Including Author, Bills, Pertinent Pages, Etc.)

AE	W. Lukosz, "Optical Systems with Resolving Powers Exceeding the Classical Limit", <i>JOSA</i> 56(11), Nov. 1966, pp. 1463-1472.
AF	A. I. Kartashev, "Optical Systems with Enhanced Resolving Power", <i>Opt. Spectry.</i> 9, 1960, pp. 204-206.
AG	H. Bartelt and A. W. Lohmann, "Optical Processing of One-Dimensional Signals", <i>Opt. Commun.</i> 42(2), June 1982, pp. 87-91.
AH	W. Gartner and A. Lohmann, "An Experiment Going Beyond Abbe's Limit of Diffraction", <i>Z. Physik</i> 174, 1963, pp. 18-23.
AI	D. Mendlovic, A. W. Lohmann, N. Konforti, I. Kiryushev and Z. Zalevsky, "One-Dimensional Superresolution Optical System for Temporally Restricted Objects", <i>Appl. Opt.</i> 36(11), April 1997, pp. 2353-2359.
AJ	D. Mendlovic and A. W. Lohmann, "Space-Bandwidth Product Adaptation and its Application to Superresolution: Fundamentals", <i>JOSA</i> 14(3), March 1997, pp. 558-562.
AK	D. Mendlovic and A. W. Lohmann, and Z. Zalevsky, "Space-Bandwidth Product Adaptation and its Application to Superresolution: Examples", <i>JOSA</i> 14(3), March 1997, pp. 563-567.

EXAMINER:

DATE CONSIDERED:

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

FORM PTO-1449 (Colb)	ATTY DOCKET NO. U 013655-0	SERIAL NUMBER 09/937,580 <b>RECEIVED</b>
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANTS' INFORMATION STATEMENT	APPLICANT David MENDLOVIC, et al.	FEB 21 2002 Technology Center 2600
	FILING DATE September 27, 2001	GROUP ART UNIT

## U.S. PATENT DOCUMENTS

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	AA						
	AB						
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						

## FOREIGN PATENT DOCUMENTS

		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB	TRANS- LATION
	AI						

## OTHER ART (Including Author, Bills, Pertinent Pages, Etc.)

	AJ	I. Cheeseman, B. Kanefsky, R. Kraft, J. Stutz, and R. Hanson, "Super Resolved Surface Reconstruction from Multiple Images", <u>Maximum Entropy and Bayesian Methods</u> , G. R. Heidbreder (ed.), Kluwer, The Netherlands, 1996, pp. 293-308.
	AK	A. Zomet and S. Peleg, "Applying Super-Resolution to Panoramic Mosaics", <i>IEEE Workshop on Applications of Computer Vision</i> , Princeton, N.J., Oct. 1998.
	AL	T. J. Pearson and A. C. S. Readhead, "Image Formation by Self-Calibration in Radio Astronomy", <i>Ann. Rev. Astron. Astrophys.</i> <b>22</b> , 1984, pp. 97-130.
	AM	Z. Zalevsky, D. Mendlovic and A. W. Lohmann, "Gerchberg-Saxton Algorithm Applied in the Fractional Fourier or the Fresnel Domain", <i>Optical Letters</i> <b>21</b> , 1996, pp. 842-844.

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